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University of Pennsylvania *Summer 1985*

Treatment of Canine Lymphoma

Lymphoma is a most common tumor in the oncology clinic here.

On a cool September evening last year seven perfectly groomed dogs, representing the different groups of AKC recognized breeds, made a final trip around the ring before the judge pointed to the winner, a red brindle Afghan hound. Similar scenes are seen weekend after weekend at the more than 1,000 dog shows held annually in the nation. To the observer this was just another best in show win. But unknown to the spectators, there was something special about this win and the dog, Ch. Jamica's Seyrief of Jeheran. The dog was battling a deadly disease and was at the show only because of recent advances in veterinary medicine.

Just two months earlier Chuck, as the dog is called by his owner, Joy Mauro-Behr, had been diagnosed as having canine lymphoma. Not too many years ago such a diagnosis meant death within a few weeks; now chemoimmunotherapy can bring the cancer into remission and the dog's life can be extended.

"In July, while being shown in the group, Chuck suddenly gagged," explained Joy Mauro-Behr. "I checked him, he seemed o.k. though the lymph nodes in the neck could be felt. The next day I took him to the veterinarian and she suspected that he might have lymphoma." An appointment was made to see Dr. K. Ann Jeglum at the School of Veterinary Medicine of the University of Pennsylvania. Diagnostic tests there confirmed the veterinarian's suspicions. Chuck had lymphoma.

"Lymphoma is a most common tumor in the oncology clinic here," said Dr. Jeglum. "It is most readily diagnosed and it is the most treatable cancer. We have developed a treatment program which combines chemotherapy with immunotherapy and we have had good success." A treatment protocol was initiated and Chuck began his visits to VHUP. "Lymphoma is a rapidly progressing fatal disease," Dr. Jeglum said. "Left untreated, the animal will die four to six weeks from the time of diagnosis. It is a systemically immunosuppressive disease." In the past dogs with lymphoma were treated with chemotherapy and their lives could be prolonged by about six to eight months. "Dogs had to be given cytotoxic drugs regularly," Dr. Jeglum said. "Eventually they would develop a resistance to the drugs, relapse would occur and the animal would die."

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Treatment of Canine Lymphoma

Continued from page 1

The protocol employed by Dr. Jeglum uses chemotherapy to bring on remission of the lymphoma. "Before treating with the vaccine we have to reduce the tumor burden," she said. "The animal has to be in remission before the vaccine can work." When remission is achieved, the dog is treated with a vaccine to stimulate the immune system so the body will fight the disease. "We produce the vaccine here," she said. "It is prepared from tumor tissue taken from the animal and it is specific for each patient. We prepare a quantity and store it frozen."

"Chuck received four chemotherapy treatments," explained Mrs. Mauro-Behr. "He had no side effects from the drugs, ate like a horse and was active and eager and did well at the shows." After these treatments the dog was in remission and a bi-monthly vaccination program was begun. He received the vaccine through March of this year when his lymph nodes again increased in size. Another cycle of chemotherapy was administered. The disease went into remission and the dog is now back on the vaccine schedule. "He is in excellent condition," said Mrs. Mauro-Behr. "We run three miles with him every day, and then he romps in the large paddock with our other dogs. His haircoat is good and his spirit is excellent. He does pine when we go to a show without him. This dog just loves the show ring and the excitement and we may show him from time to time."

A recent study conducted here at the School closely examined the treatment of canine lymphoma with chemoimmunotherapy. The work was supported by funds from the American Kennel Club. "We studied 30 dogs with confirmed lymphoma," said Dr. Jeglum. The dogs represented a variety of breeds, a number were mixed breeds. The age range was from three to 14 years, the median age was 7.5 years. There were 15 males and 15 females in the study. Of the males four were castrated and of the females nine were spayed.

A complete medical work-up was done for each animal and the extent of the disease was recorded using the World Health Organization clinical staging system for tumors in domestic animals. A lymph node was removed for histopathology and for vaccine preparation.

The dogs received two cycles of combination chemotherapy," said Dr. Jeglum. "Each cycle lasted four weeks with a different single drug given each of the four weeks. By using different drugs the chances of drug resistance occurring were minimized." There was a two to three week rest between the cycles. The treatment caused remission of the disease in all animals. The dogs then received the vaccine This vaccine was made specifically for each animal from its own tumor. Other vaccines have been used to trigger a general immune response; they do not work as efficiently as the specific vaccine.

Dr. Jeglum injects the vaccine directly into the lymphatic system rather than under the skin. "By giving it directly into a lymphatic vessel, the vaccine is delivered quickly to the lymph nodes," she said. "They are the sites for generating a positive response to tumor antigens and they are important in the initiation of system immunity." The procedure is simple. The animal is sedated, a small incision is made in the foot and the lymphatic vessel is isolated. By means of a dye this tiny vessel is dilated and then the vaccine is slowly administered. The incision is stitched and the dog is up and around a few minutes later.

In the study three vaccinations were given initially. The first two were injected two weeks apart and the third one month after the second. The animals were examined for relapse every two weeks. While in remission the dogs received vaccine boosts every four to six weeks. If a relapse occurred, a four week cycle of chemotherapy was given. Upon remission the vaccine protocol was resumed.

"We found that we could use the chemotherapy cycles repeatedly and that remission would occur," Dr. Jeglum said. "The immunotherapy significantly prolongs the remission duration and it enables the animal to respond to repeated chemotherapy. Drug resistance may be altered by the immunotherapy."

The median survival rate for the dogs in the study was 13 months which is a significant increase over the survival rate of animals treated with either chemotherapy or immunotherapy alone. Dr. Jeglum pointed out that a number of dogs from the study are still alive and are doing well.

It was found that the vaccine did not have side effects or cause a toxic reaction in the animals. "In the long run the vaccine is less expensive than drugs," said Dr. Jeglum.

By employing chemoimmunotherapy the researchers were able to obtain a remission rate longer than seen with either chemotherapy or immunotherapy alone. They found that animals receiving chemoimmunotherapy had a much greater median survival rate than previously seen.

Dr. Jeglum and her colleagues currently are investigating immunity in canine lymphoma. They found that the antibody levels against purified lymphoma antigens correlate with response to therapy in individual dogs. Animals with the highest antibody level have the longest survival rate. This study is continuing.

The treatment offers hope to the countless dog owners who face losing their dogs to lymphoma each year. As research continues, further advancement in treatment will no doubt be made.

"We are grateful," said Mrs. Mauro-Behr. "Chuck is alive and he leads a normal life. The therapy did not affect his show career, he continued to win. We know the disease cannot be cured. It will always be there, but the therapy keeps it in remission. Let's hope his battle with lymphoma has shown dog owners that the prognosis for a dog with lymphoma need not be poor. There is help and a canine companion with this disease can live many months, even years, because of chemoimmunotherapy."

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Botulism, *the silent killer*

Botulism, regarded by many as a form of food poisoning due to spoiled meat is seen relatively frequently in equine patients at New Bolton Center. "We see about 50 botulism cases annually, more than are seen by any other veterinary teaching hospital in the country," said Dr. Robert H. Whitlock, professor of medicine at the University of Pennsylvania's School of Veterinary Medicine. "In addition we investigate 20 to 30 additional outbreaks, several of which are referred to us by the Communicable Disease Center in Atlanta because they are not permitted to work on animal diseases." The number of botulism outbreaks isn't surprising because the spores of the bacillus *Clostridium botulinum* are found in about 20 percent of soil samples from the Middle Atlantic states and Kentucky. These spores are dormant in the soil but under the right conditions they become vegetative and produce a toxin so potent that a tiny amount can cause death. The organism only grows in anaerobic conditions. The intestines of the young, puncture wounds, improperly canned foods and forage material incorrectly ensiled may provide the right environment in which the spores can become vegetative and produce toxin. The spores themselves are relatively harmless and do not produce toxin unless the conditions are exactly correct.

Botulism strikes all mammals, particularly young ones. It is implicated in some cases of Sudden Infant Death Syndrome. Botulism can develop because of ingestion of preformed toxins. People are exposed to the toxin primarily through improperly canned foods. Animals come into contact with the toxin through spoiled silage or spoiled meat. Botulism can also occur when a wound is contaminated with the spores and heals over, providing an anaerobic environment for the organism to flourish. The third way to develop the disease is to ingest the spores which then become vegetative in the intestinal tract if the right conditions exist. Toxin thus produced is absorbed into the body. It is thought that this is the most likely way by which foals contract the disease.

The study of botulism at New Bolton Center began in 1981 when 25 horses at a racetrack were diagnosed with the disease. The mortality rate was nearly 75 percent. "We obtained some antitoxin late in the course of the outbreak from Canada," explained Dr. Whitlock. "But we could save only a small percentage of the animals. Today the chances of survival are better as we have developed an antitoxin at New Bolton Center. It is readily available and is given to the patient within an hour after admission to the hospital."

When botulism is suspected the veterinarian or physician cannot order a battery of tests to confirm the diagnosis. Only rarely can the toxin be found in the bloodstream. The patient has no fever nor will the blood picture be abnormal. A tentative diagnosis is made by clinical symptoms only. These are muscular weakness, inability to swallow normally and exercise intolerance. Such signs can also be associated with other disorders and tests must be performed to rule out other diseases. The clinical signs of botulism progress depending on the amount of toxin present in the body and the amount of muscular exertion. Animals and people with rapidly progressing signs have a poorer prognosis than those with gradual onset.

It has been found that the horse is extremely susceptible to botulism toxin. It only takes a small amount to cause symptoms. The toxin prevents release and production of acetylcholine, a chemical transmitter of impulses to the muscles. Toxin attaches itself to motor end plates and this prevents the transmission of nerve impulses and flacid paralysis results (muscle weakness).

A mare and her "shaker" foal being cared for at New Bolton Center.

Young foals are most prone to botulism caused by the ingestion of spores. As the animal gets older, it appears that the intestinal environment changes and no longer is favorable for the spores to produce toxin; they pass through without harm. It is thought that most cases of the disease occurring in older horses are due to ingestion of toxins or large numbers of spores present by chance in the feed. Dr. Whitlock stressed that mature horses seen with the disease came from well-managed farms and that it is extremely difficult to trace the origin of the toxin.

A three-week old foal with botulism on the way to recovery.

After the outbreak in 1981 researchers at New Bolton Center began to produce antitoxin for *Clostridium botulinum* infection. The organism causing the disease was type B. There are several different toxin types; for example in Europe horses are affected by type C botulinum. The antitoxin is a gammaglobulin derived from horses with a high antibody titer against botulism. These horses are injected with a toxoid, toxin rendered harmless. Repeated injections of toxoid stimulate antibody production over a period of months. Then the animal is challenged with the toxin, this results in still higher numbers of antibodies which then are removed and stored for use in affected animals.

"Since we have been giving the antitoxin we have been able to reduce the mortality rate to about 20 percent," said Dr. Whitlock.

"The prognosis is better if the animal is not recumbent; this is particularly true for older animals. Once an adult horse is down it is more difficult to treat effectively. Pneumonia develops and fluid can accumulate in the chest. Foals on the other hand are easier to handle and the prognosis is pretty good even though the foal is down." Nevertheless, even for the young animals a great deal of intensive nursing care is required. They may need a respirator to assist with breathing. Intravenous feeding may be required and the veterinarian has to look for ways to prevent pressure sores. These animals require prolonged intensive care and antitoxin therapy.

"The antitoxin does not cure the disease," Dr. Whitlock explained. "It prevents further spread of the toxin in the body. It does not remove the toxin from the already affected motor end plates but it binds the circulating toxin, preventing it from attacking more sites." Affected animals have to be kept very quiet with a minimum of physical activity. "A lot of thrashing and struggling just aggravates the condition," he said. An animal or person with botulism will not remain paralyzed. The body develops new motor end plates at the affected sites and gradually the function of muscles returns. This healing process can take anywhere from one to three weeks depending on the severity of the disease. "It is an expensive proposition," Dr. Whitlock said.

Antitoxin is not the only weapon against this disease. The Laboratory of the Department of Public Health, Lansing, MI, developed a vaccine (toxoid) against botulism type B for use in horses. This vaccine was tested at New Bolton Center and found to be effective. In studies conducted by Dr. Whitlock and his group horses were injected three times at monthly intervals with the vaccine. Two weeks after the last injection they were challenged with high doses of toxin. They did not develop the disease. It was found that these horses had protection for more than 100 days after the last vaccination even though their antibody titers against botulims were quite low by then.

The vaccine has also been used for pregnant mares in Kentucky. The mares developed antibodies which were passed to the foals passively through the colostrum giving protection at the most critical time for the young animal. Unfortunately, because of legal concerns, this vaccine is not available for general distribution outside of Michigan and Kentucky. The vaccine is only available in states where the state government has signed a waiver stating that Michigan cannot be held responsible for any complications due to the usage of the vaccine. To date only Kentucky has signed such document and the state there

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Shipping Fever and its Prevention

Each year millions of dollars are lost by the American beef and dairy industries to shipping fever, a debilitating disease of cattle and other large animals. Shipping fever, the layman's term for infectious bronchopneumonia, is primarily associated with cattle which have been transported from the farm to feedlots; however, the disease can strike a herd which has never left the farm.

"The organisms causing infectious bronchopneumonia are everywhere," said Dr. Robert M. Dyer, a researcher and lecturer in medicine at Veterinary School of the University of Pennsylvania. "Cattle are constantly exposed to them. However, to have an outbreak of the disease, three factors must be present: the viral component, the bacterial component, and a stress factor."

> ***It has been found that infection due to one virus alone will cause just a mild respiratory infection in unstressed, healthy cattle.***

Dr. Dyer explained that at least 20 different viruses are associated with the disease and that eight or nine have been definitely identified as causative. In addition to viruses, bacteria play a major role in the disease process. Stress, the third major factor contributing to the susceptibility to bronchopneumonia can be transportation, overcrowding, mishandling, poor ventilation, starvation, or dehydration.

It has been found that infection due to one virus alone will cause just a mild respiratory infection in unstressed, healthy cattle. However, in animals that are stressed, the immune system is less resistant. The initial infection by one agent weakens it further and paves the way for the invasion of other organisms, causing multiple infections resulting in bronchopneumonia.

"In many outbreaks, it is not uncommon to find multiple infections occurring simultaneously," explained Dr. Dyer. "The morbidity may be as high as 100% in a herd with a mortality rate of up to 20%. One animal may have a viral infection, this begins the chain of events. Bacteria which are normally present in its upper airways invade the lower airways in the lung and severe disease results. The animal sheds the viruses and bacteria, and disease spreads."

Normally a large number of particles and organisms are filtered out as the animal breathes. Particles which do reach the lungs are expelled by means of the mucociliary apparatus, cells which line the trachea and the bronchioles and which produce a constant mucous flow that is expelled. If these cells are damaged by infectious agents, gaseous irritants or extremes in temperature, the clearance of infectious agents may be hindered. Antibodies and cell-mediated immunity protect the upper and lower airways against infectious agents. Another protective mechanism is alveolar macrophages, cells which will ingest and destroy viruses and bacteria. The whole defense mechanism is in a state of delicate balance and it takes very little to upset it. Elevated corticosteroid levels, inhaled pollutants, viral infection and a number of other factors can render the defense mechanism of the pulmonary system ineffective, leaving the animal vulnerable to bronchopneumonia.

Dr. Dyer explained that the most commonly found viruses associated with shipping fever are herpes viruses, parainfluenza viruses, bovine syncytial virus, adenoviruses, bovine rhinovirus and bovine viral diarrhea virus. Each of these produces slightly different symptoms. Some, like the parainfluenza virus, are shed for up to 20 days following infection. A number of bacterial infections occur simultaneously to or shortly after exposure to the viruses. The most common are those caused by pasteurella organisms. Vaccines have been developed against three of the viruses and one of the bacterial agents. However, because of the multitude of infectious agents, the best weapon against shipping fever is prevention.

"Farmers obviously cannot remove the infectious agents from the environment as they are all around us," said Dr. Dyer. "But they can limit the stress factor." He explained that the nature of the beef industry requires extensive shipping of cattle destined for the feedlot. "It's a geographic problem," he said. "Cattle are raised on pasture in one part of the country and then, when they are about four to five months old, are sent to the feedlots located in the grain producing areas of the country." Normally these calves are with their dam one day, nursing and grazing. The next day they find themselves in a truck being transported to a salesbarn and then to a feedlot. The animals suddenly must feed on grain and silage, learn to eat from a trough instead of grazing or suckling. They can obtain water only from an automated watering device instead of a stream or tub. Conditions in a feedlot are crowded and the young animals must find their place in the new social order of the herd. In addition, the calf is dehorned, wormed and castrated. This places considerable stress on the young animal. Many calves refuse to eat or drink and become starved and dehydrated. Also, during the transport and in the feedlot they are exposed to new infectious agents which their stressed systems cannot effectively combat.

The calf becomes sick with bronchopneumonia. As the disease develops the animal sheds the virus infecting others in the herd. Because the margin of profit in cattle raising is so small, the feedlot operator often treats a sick animal with antibiotics. If the first drug doesn't work, another one is tried. This practice can have dangerous consequences because bacteria quickly become resistant to drugs and often only the more costly preparations will effectively combat the infection. It is an expensive proposition, not only in terms of the money spent for antibiotics but also in terms of the money realized later from the sale of the feedlot cattle. "A sick animal is a poor weight gainer," said Dr. Dyer. "It does not convert the feed to bodyweight efficiently. If it is sick for a while, it will never reach the optimum slaughter-weight and becomes an economic burden."

According to Dr. Dyer there are some measures that can be taken to reduce the susceptibility to shipping fever. The stress factor can be reduced by preconditioning the young calves. "They could be weaned and accustomed to the feedlot food while still with their dams," said Dr. Dyer. "Deworming, castration and dehorning could take place while they are still in a familiar environment, about four weeks prior to shipping." In a study conducted at New Bolton Center it was shown that preconditioned calves exposed to stress outperformed stressed calves not receiving preconditioning. Others have shown that the preconditioned calves experience less weightloss upon arrival at the feedlot and gain weight at a greater rate than unconditioned animals. They showed an overall higher degree of wellbeing for the first 150 days after the arrival on the feedlot. This period is the most important for calves to do well as most losses due to respiratory disease occur during the first 45 days following arrival at the lot.

Dr. Dyer also pointed out that cattle acquired in groups should be kept together to minimize social stress. It has been found that when groups of cattle from different sources are mixed in the feedlot, widespread shedding of viruses occurs and infection results. He feels that feedlot operators should buy cattle from fewer sources and keep each lot of cattle separate for at least the first 14 days in the feedlot.

Beef farmers are not the only ones who have to contend with shipping fever. It also affects dairy cattle. Here the disease most often occurs when

> ***The organisms causing infectious bronchopneumonia are everywhere. Cattle are constantly exposed to them.***

calves are housed together in calf houses. Frequently the ventilation in these structures is poor, resulting in very moist air and an abundance of ammonia gases from urine and feces. High concentration of these gases have been shown to damage the airpassages, making the animal more vulnerable to disease. Because calves are concentrated in an enclosed environment, bronchopneumonia, once in the barn, can spread like wildfire.

An additional risk on the dairy farm is that the infection can spread to the adults, causing abortions and resulting in great losses of future stock and milk production.

According to Dr. Dyer, dairy calves should be housed individually in hutches to minimize the spread of infectious diseases. If they must be housed in a barn then this structure should be well ventilated and frequently cleaned to prevent the build-up of gases and infectious agents.

Dr. Dyer is currently investigating the immunologic mechanisms of the lung. He is looking at how the organ protects itself biochemically and how the cells kill bacteria. "It is basic research," he said. "Not much is known about the defense mechanism in the respiratory tract, how it functions and why it breaks down. We need to gather much more information to find a more efficient way to combat bronchopneumonia in cattle and other large animals. The traditional means of vaccines and antibiotics are not working too well. Until we find a better way of treating these animals, prevention is the key. Good animal husbandry and reduction of stress, be it environmental or due to transportation, are vital to reducing the losses incurred by shipping fever."

Dr. Dyer graduated in 1975 from Penn's veterinary school. He did graduate work at the University of Michigan. Now he is a lecturer in medicine and is working on his Ph.D. His research is supported by the USDA and the Pennsylvania Department of Agriculture. *H.H.*

Resource Update VHUP

The exotics clinic will be held Tuesday nights only.

Marie A. Moore Chair in Humane Ethics and Animal Welfare

Robert Marshak, Dean of the University of Pennsylvania's School of Veterinary Medicine has announced the establishment of the nation's first academic chair in humane ethics and animal welfare.

The Chair, endowed by Mrs. Marie A. Moore of The Plains, Virginia, will be known as the Marie A. Moore Chair in Humane Ethics and Animal Welfare. It will confer an essential measure of recognition and prestige on humane ethics and animal welfare as a legitimate field of scholarship.

Mrs. Moore has devoted much of her life to the welfare of animals. For many years she investigated cases of animal abuse for the Virginia Federation of Humane Societies. She recognized the dire need for an animal shelter in Fauquier County, VA. and established one on her farm in The Plains. For 12 years she almost singlehandedly ran this shelter which took in and cared for 22,870 dogs, large numbers of homeless cats, occasional cows, horses and wildlife. In 1970, when the Humane Society of the United States established a shelter in the area, Mrs. Moore closed the shelter on her farm.

For her animal welfare work Marie Moore was honored by the Washington Animal Rescue League which presented her with the Award of Merit. She served on the President's Council of the Humane Society of the United States and is an honorary member of the Fairfax County Humane Society, the Humane Society of New York and the American Horse Protective Society.

Marie A. Moore with two of her Mastiffs

For many years Mrs. Moore bred and raced Thoroughbreds here and in England. She devoted a great deal of effort to the Mastiff breed at a time when this breed was being reestablished after devasting losses of breeding stock during the war.

Her Book, *The Mastiff*, was published in 1978 providing an overview of the history and development of this breed.

Marie Moore is an AKC licensed judge and her many assignments have taken her all over North and South America, England and South Africa.

The Charing Cross Research Fund

The Charing Cross Research Fund to support research into inflammatory diseases of the dog's central nervous system was established at the University of Pennsylvania School of Veterinary Medicine by Gilbert S. Kahn, Miami, FL, a prominent breeder of Japanese Chins and an AKC licensed judge.

"Last year my Japanese Chin, Ch. Charing Cross Quest-Chin-Mark, suddenly became ill," said Mr. Kahn. "At first we thought that he had disk trouble. He was seen by a veterinarian and received medication." The dog did not improve.

"We got a second opinion, the medication was changed, but it didn't help. He died September 5, three weeks after the first signs of illness." "Marko" had an inflammatory disease of the central nervous system, labeled GME (granulomatous meningo-encephalitis).

"This is a disease that can occur in any breed of dog," said Dr. Sheldon Steinberg, professor of neurology and Chief of the Section of Neurology at the School. "We don't know what causes it, and it is difficult to diagnose in a living animal. Positive diagnosis can only be made through pathological studies after death when we look for characteristic lesions."

Diagnosis is difficult for other reasons. "Typically the dogs are not systemically ill," said

Dr. Steinberg. "Some dogs may show signs similar to disk disease, as was the case with Mr. Kahn's Marko. Others may exhibit signs which indicate that an area of the brain is affected. Right now there are no certain clinical criteria for the diagnosis of GME."

Mr. Kahn's gift has enabled Dr. Steinberg to study four affected dogs and to begin to devise a treatment method. "We want to develop a basis for clinical diagnosis," he said. "We are performing a number of very specialized tests of the blood and cerebrospinal fluid, looking at cells, protein and antibodies. We are also doing CAT-scans on each suspected patient. These procedures are quite expensive and would not be possible if we hadn't received the funds for the study."

Concerning treatment, Dr. Steinberg explained "It has been known that patients with GME have a temporary response to steroids. But this is not a long term solution. Our four dogs with GME currently are treated with cortisone and an immunosuppressant drug on an alternate schedule. It appears to be working. One dog has been on these medications since October and it is doing well."

Dr. Steinberg and his group are just at the beginning of his study. "There are many questions to be answered," he said. "Are we dealing with one disease or a group of diseases? What is the cause? How can we better diagnose it? How can we treat it effectively?"

The questions are many. Mr. Kahn's gift has provided the means of studying GME, and this ultimately will benefit the many dogs which contract the disease. "The sudden, unexpected loss of Marko prompted me to fund this study," said Mr. Kahn. "We must find the cause of this dreadful disease. I am pleased that Dr. Steinberg already has been able to help four dogs. Marko's death provided me with the impetus to do something so that others may not have to suffer the loss of a favorite dog."

Animal Crackers

Class of 1985

The University of Pennsylvania awarded the V.M.D. (Veterinariae Medicinae Doctoris) degree to 105 graduates last May 20th. All other American Veterinary Schools award a D.V.M. to their graduates. The degrees are equivalent. The first class graduated from Pennsylvania in 1887. The first woman obtained her degree in 1938. Since that time there have been 4,062 graduates, 3,459 men and 603 women. There were 53 men and 52 women in the Class of 1985.

The number of women choosing veterinary medicine as a profession has been increasing steadily. Total student enrollment in the 27 veterinary colleges in the United States for the 1985-1986 academic year was 8,843. Of these, 4,516 (51.1%) were men and 4,327 (48.9%) were women. The American Veterinary Medical Association reports that 28% of all qualified applicants were accepted in the 1984 first year class.

At the University of Pennsylvania, the Admissions Committee received 626 applications for admission to the Class of 1989 (entering in September 1985). The number of applicants has been decreasing since 1975 when 1,280 sought admission. The 1985 applicant pool had 211 men and 414 women. It is probable that two-thirds of the Class of 1989 will be women. About 110 are accepted in a class.

Veterinary medicine offers a wide range of career opportunities in addition to its primary charge of delivering health care to animals. In the research field, veterinarians were the first to discover filterable viruses, tumor viruses and the cause of viral encephalitides. They also developed tuberculin, tetanus toxoid, the first tumor vaccine, the first pinning techniques in fracture reduction and the first hip replacement prosthesis. Veterinarians devised the first spinal anesthesia, the first electrocardiogram and the first cardiac catheterization. The development of animal models of human disease is a major contribution of the profession. The veterinarian also plays an essential role in regulating the safety of food and drugs for human use and in maintaining public health standards.

Information about the School, including entrance requirements, may be obtained by writing to the School of Veterinary Medicine, 3800 Spruce St., Philadelphia, PA 19104.

The Canine Consultant

The Canine Consultant series of six audio cassettes has just been introduced. The tapes deal with six specific aspects of a dog's life—Selecting a Dog; Welcome Home, Puppy; Puppy Grows Up; It's a Dog's Life; Recycled Pet; Your Dog's Final Years.

This new learning method works well with children as well as adults. It covers the obvious things that may be overlooked, and the tapes can be played while playing with the puppy, driving the car or coping with the older dog. They provide a new way to learn about and care for dogs.

SELECTING A DOG gives the prospective buyer a verbal dog show tour, tells what questions should be asked and stresses responsible dog ownership.

WELCOME HOME, PUPPY helps establish good habits from the minute the puppy comes in the door. It covers the basics for every type of home, owner and dog. A wonderful gift to go with a new puppy.

PUPPY GROWS UP takes the owner through two years—including those months of the "terrible teenager".

IT'S A DOG'S LIFE covers changes that take place in our lives—separation, divorce, moving, illness, mis-matches and vacations (with or without the dog.)

RECYCLED PET refers to the "adopted" or "inherited" dog, usually an older dog, and explains why this can be a better choice than a puppy.

YOUR DOG'S FINAL YEARS is a sympathetic but realistic approach to get dog and owner through this difficult period.

There is much historical trivia along with many facts and helpful hints. The whole series is a guide for the pet owner and brings attention to how help can be obtained from veterinarians, breeders, groomers, boarding kennels, dog clubs and shelters.

The cost is $9.95 for each tape, from Bardwyn Productions, Inc., 25 Van Zant St., East Norwalk, CT 06855.

Veterinary Student Government Award for Excellence in Teaching

The student government at the School has created an award for excellence in teaching. It was presented for the first time this year to four teachers. The recipients were Ms. Carol Hand, an instructor in anatomy; Dr. Geraldine Kaufman, an instructor in intensive care; Dr. Charles Newton, associate professor of orthopedic surgery; and Dr. Charles Reid, professor of radiology.

The award was designed to enable each of four classes to honor an individual who exemplified the highest degree of proficiency in teaching. The person chosen could be anyone involved in the educational process (i.e. a laboratory technician, resident, or a full professor) who made a major contribution to the students' veterinary education through dedicated, creative and informative teaching.

"All too often people spend an inordinate amount of time preparing and teaching their classes or rotations without any tangible acknowledgement," said Anne Barnhart, president of student government. "This award is intended to thank our teachers for their commitment and dedication and to encourage others to strive for the same degree of excellence."

Veterinary Student Government Award Recipients Ms. Carol Hand, Dr. Charles Reid, Dr. Geraldine Kaufman, Dr. Charles Newton.

Giardiasis

Giardia are protozoan parasites which are found worldwide. In the United States, *Giardia* accounts for the largest percentage of intestinal parasites found in humans. In dogs and cats, infection may not be detected unless a special technique is used—zinc sulfate centrifugal flotation is recommended (the sugar and salt solutions used routinely in many laboratories are often inadequate). Because affected animals may not shed cysts continually, repeated fecal examinations may be necessary for diagnosis.

The most prominent sign of *Giardia* infection is diarrhea which may be intermittent or chronic. Definitive diagnosis depends upon recovery of the organism. Several drugs are available for treatment. The majority of *Giardia* infections are believed to cause no signs of disease in their hosts.

The life cycle of *Giardia* is direct (no intermediate host is required). Transmission is by the fecal-oral route. Crowded, unsanitary conditions and drinking water contaminated with cysts favor spread of infection. There has been much publicity given outbreaks in humans traced to contamination of water with *Giardia* cysts. Treatment of asymptomatic cyst passers (humans, dogs, cats, birds, etc.) is recommended because of the potential of the parasite to cause disease. Clinical giardiasis can appear in animals of any age, but animals less than one year old seem to be particularly susceptible.

A number of reports describe giardiasis as a "new" disease. As the condition receives more publicity, it is probable that it can be diagnosed more frequently. It's been with us for a long time. If found in companion animals, it should be treated, especially because there is the possibility of direct transmission to humans.

The Complete Dog Book

The 17th edition of the American Kennel Club's THE COMPLETE DOG BOOK has just been published. This book is intended to acquaint the public with the appearance and qualifications of each breed registered by the AKC, and guide owners in keeping their dogs healthy, happy and well-behaved.

The official breed standard and history of the 129 pure breeds presently recognized by the American Kennel Club are given, plus a photograph of each. In addition, there are 115 photographs of dogs at rest, work and play.

There are constant changes in the world of pure-bred dogs. Since the 16th edition of this book was published in 1979, Group VII, the Herding Group has been added, made up of 14 breeds previously shown in the Working Group. At the present time, there are 24 breeds or varieties shown in the Sporting Group I, 21 in the Hound Group II, 19 in the Working Group III, 24 in the Terrier Group IV, 17 in the Toy Group V, 13 in the Non-Sporting VI, and 14 in the Herding Group VII. For those who might check the addition, Poodles are represented in two groups, two Non-Sporting and one Toy, and there is a Manchester Terrier in the Terrier Group and in the Toy Group. There are varieties in other breeds. Cocker Spaniels, Bull Terriers and English Toy Spaniels are divided by color, Beagles, Manchester Terriers and Poodles by size, and Dachshunds and Chihuahuas by type of coat. If every breed and variety were present at a show, there would be 141 dogs representing the 129 breeds.

There is information about registration, dog shows, obedience trials, and junior showmanship. Charts and a glossary explain many terms, such as cat foot, hare foot and splay foot; level back, camel back, hollow back and roach back; squirrel tail, sickle tail and screw tail; colors such as Isabella (fawn or light bay), merle (blue-grey with flecks of black) and roan (a mixture of colored and white hairs—blue roan, orange roan, lemon roan, etc.). The answer to many more questions can be found.

A section on Training offers advice for the first-time dog owner as well as the veteran. It recommends that every dog know at least five basic commands: *heel, sit, down, stay* and *come*. Housebreaking techniques are given.

A section on the Healthy Dog gives basic veterinary information. The material was reviewed by faculty members of the University of Pennsylvania's School of Veterinary Medicine. Topics covered include The Healthy Dog, Preventive Care, Adminstering Medicine, Nutrition and Feeding, and Reproduction and Breeding. Signs and symptoms of illness are covered and there is a section on First Aid which gives instructions about what to do in an emergency situation before you can reach a veterinarian.

THE COMPLETE DOG BOOK can be called the greatest single reference on dogs in print and should be in every dog owner's library. Although it covers only those breeds eligible for championship competition at dog shows held under American Kennel Club rules, anyone with an understanding of all the information it contains is a "dog person" with a good basic education.

The book is published by Howell Book House and is available ($16.95) at better book stores or from the publisher (230 Park Avenue, New York, NY 10169).

Hot Weather Notes

The increased incidence of rabies in wildlife makes it extremely important that dogs and cats are vaccinated. In 1984, there were 384 confirmed rabies cases in Pennsylvania—281 raccoons, 38 skunks, 35 bats, 8 foxes, 4 cats, 3 squirrels, 3 cows, 3 woodchucks, 2 dogs, 2 rabbits, 2 possums, 1 horse, 1 pony and 1 deer. There were two cases of human rabies in the United States in 1984, one of these in Pennsylvania. All dogs and cats should be vaccinated at three months of age, then one year later, then have a booster every two or three years (depending on type of vaccine used). Follow the advice of your veterinarian.

Fleas and ticks are a constant problem but always seem worse in the warm months. It is necessary to treat the environment and use insecticides to kill adults on the animal. New products have been developed to kill immature forms. Be sure to read instructions—some products are not safe for cats. Remember to be careful when removing ticks as you may dislodge the body and leave the feeding parts in the skin.

MOST IMPORTANT—An automobile with the windows closed can become a death trap in just a few minutes. Heat stroke occurs in hot and humid weather. The signs are staggering, collapse and even unconsciousness. Cool the animal immediately by soaking with water or packing with ice. Adequate ventilation and an ample supply of drinking water are needed to prevent trouble.

Heartworm is a nationwide problem. Medication to prevent infection must be given daily to prevent infection, particularly when the dog is exposed to mosquitoes.

"Hot Spots" are skin lesions which may occur when the dog scratches. Reddened, moist areas may appear overnight. There are numerous home remedies but your veterinarian can recommend a preparation to have available at the first sign of trouble. If the problem persists, the cause must be determined before an effective treatment can be prescribed.

New Pacemaker enables Bucky to compete at Devon

Bucky, the American Quarterhorse with a pacemaker (*Bellwether*, Summer 1984), competed in four classes in the Local Hunter Division at the Devon Horse Show in May. Bucky was able to participate because a new, more sophisticated pacemaker replaced the original device.

The horse, which has an arythmia caused by a heartblock, had been doing fine with the pacemaker implanted last year. His heart beat a steady 45 beats per minute and the animal was frisky and active. However, he could not be ridden nor could he jump as his heart rate could not increase beyond the 45 beats.

"A few weeks ago someone donated a more advanced pacemaker, one which can increase the heart rate as the patient exercises," said Dr. Virginia Reef, the veterinarian who implanted the original pacemaker. "With the previous device, Bucky had one electrode implanted in the right ventricle. Now we have added another electrode which is placed in the tissue of the atrium. The two electrodes are connected and attached to a new pulsegenerator, one which responds to the demands made on the heart by exercise."

The new pacemaker enables Bucky's heart to beat up to 150 beats per minute, a rate needed for such activity as being ridden and jumping fences. "The horse can resume his career as a hunter," Dr. Reef said. "He is safe to ride and can be shown, however, he cannot be raced on the flat, that would require more than 150 beats per minute."

Bucky made his show debut at Devon and demonstrated to everyone that a tiny device, so common in human medicine, can also benefit the horse and prolong its life.

Alix Coleman photo

Bucky and Dr. Reef clearing a jump at the Devon Horse Show.

Admissions and Financial Aid

This year the School of Veterinary Medicine graduated its 100th class. Four years ago the students in this class had been successful candidates in a highly competitive admissions process. They then embarked on an educational program which demands rigorous, full-time application. However, 60 percent of the students also had to contend with the emotional and time-consuming problem of financing their educations.

In a real sense, admission to the School and Financial Aid have some interlocking conditions. Most students applying for admission to Penn's Veterinary School have a strong desire to attend this School. Last year tuition for Pennsylvania residents and contract students was $9,630. The median tuition for all U.S Veterinary Schools was $3,170. Many students are finding it increasingly difficult to meet the high cost of veterinary medical education at Penn. Our School offers financial aid to those students who qualify but because of our high tuition, and because most of our aid is in the form of loans, applicants foresee a gloomy financial situation looming in their future.

The fact that we still have more applications than any other veterinary school in the United States speaks very highly of our reputation, but our unfavorable position on tuition and financial aid may make it more difficult to attract the very best students.

Following is a brief discussion of the admissions and financial aid situations and a consideration of some of the steps which the School is taking to improve the picture.

Admissions

The admissions procedure is one of the most difficult and time-consuming functions in the School of Veterinary Medicine. Decisions concerning the admissions of new students rest with the Admission Committee, chaired by Dr. Joseph F. Skelley, Associate Dean for Admissions and Student Affairs. In 1985, there were 626 applicants for 109 places; approximately 310 applicants were interviewed by the Admissions Committee.

Students admitted to the School come from one of several categories: Pennsylvania residents, out-of-state residents and contract students. Penn's Veterinary School has the second highest tuition of any veterinary school in the country, and we are increasingly concerned about this disparity. Not only are we interested in quality students, we also wish to maintain a diversity in classes based on such things as socio-economic background, major career interests, geographic distribution and racial and ethnic origin. With our high tuition and the drying-up of sources for financial aid, we are deeply concerned that financial status may become an overriding factor in students applying here and becoming matriculants.

Student Financial Aid Program

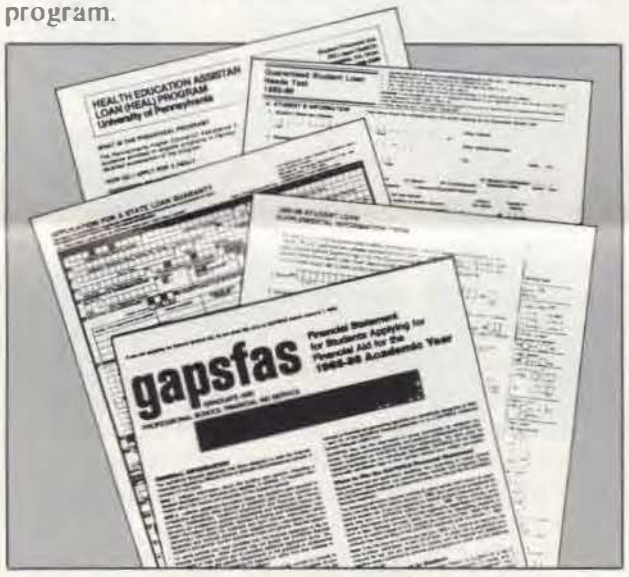
Financial aid, unfortunately, has become a major feature of academic life for about 60 percent of students in the Veterinary School. Unfortunate in that it contributes significantly to the stress felt by many students in their rigorous educational program and it is the source of a substantial debt load accumulated by the time of graduation.

Eligibility for financial aid at the Veterinary School is based strictly on the demonstration of need by the student. Need is established by a careful scrutiny of a student's and his/her family's financial situation.

Once a need is documented, the student becomes eligible for various types of aid. At the Veterinary School almost all financial aid is in the form of loans; we have only limited scholarship funds.

The first $5,000 of any need must be met with a Guaranteed Student Loan (GSL) which the student obtains from a participating bank. This loan is at 8 percent interest which is paid by the federal government while the student is in school. If a student's need exceeds $5,000 he/she becomes eligible for other federal funds which are administered by the University. The two primary loan sources in this category are the National Direct Student Loan (NDSL) and the Health Professions Loan (HPL). The NDSL is at 5 percent interest and the HPL interest is 9 percent.

Students may also qualify for aid through the Work-Study Program in which an individual is paid for work (e.g. feeding animals, washing glassware, typing and filing) performed, usually in the Veterinary School. This is a federally funded program.



In addition to these loans and the Work-Study Program, the Veterinary School has some small loan and scholarship funds which are set up by individuals, kennel clubs and pharmaceutical firms.

If the entire need of a student cannot be met through these sources, two courses of action are open: (1) the student must obtain outside loans at a higher rate of interest, or (2) the Veterinary School subsidizes the Financial Aid Program with loan/scholarship money.

There are two types of higher interest loans available to our students, both of which are obtained by the student applying directly to a lender. One of these is the HEAL loan (Health Education Assistance Loan) and the other is the PLUS loan (Parental Loans to Assist Students). The PLUS loan is currently at 12 percent interest which must be paid while the student is in school. Interest on the HEAL loan varies with the rate of Treasury Bills (maximum rate of 91-day T-bill plus 3.6 percent), and while it may be deferred until graduation, it begins to accrue at the time the loan is made. Recently the Pennsylvania Higher Education Assistance Agency (PHEAA) has begun to issue HEAL loans at a lesser rate of interest (maximum rate of 91-day T-bill minus 0.5-1.0 percent).

Most of the major loan programs have limits which cannot be exceeded. For example, the GSL has an annual limit of $5,000 and an aggregate limit of $25,000, including loans made in undergraduate school. The NDSL has an aggregate ceiling of $12,000, including undergraduate loans. Because of the higher cost of our educational program (increased tuition, higher costs of books and instruments) many students now reach the limit of their NDSL eligibility by the second or third year in school. When this is the case the student must usually obtain loans at the higher interest rate.

A second major problem, also related to the higher costs of education, is that students are accumulating loan debts of staggering levels. An analysis of 51 students in the 1985 graduating class reveals loan debts from $29,300 to $63,938. Thus many students just beginning professional and family life (including purchase of expensive instruments and equipment, a home, etc.) are faced with an almost overwhelming financial situation, especially when one considers that the average starting income of a veterinarian is about $19,500.

If even a part of the changes proposed by the federal administration are enacted into law, we face a situation in which there simply will not be enough aid money available in any form to meet students' needs as they are presently determined.

Two approaches which would obviously have a great positive impact on the gloomy financial aid picture are to lower tuition and to create a large endowment fund for scholarship aid. Realistically, neither of these changes can be expected in the immediate future.

The Veterinary School this year has taken some steps to improve the financial picture and to help alleviate some of the stress now felt by students. Dean Robert R. Marshak has directed that scholarships of $3,000 each be awarded to five students in the incoming class on a merit basis. The scholarships will continue for the four years while a student is in school and will enable us to attract outstanding students who might go elsewhere to school at a lower tuition.

This year the School also published a *Handbook on Student Financial Aid* which contains detailed information about how need is determined, loans, repayment schedules, etc. Some of the apprehensions students experience about financial aid are related to not having enough information (or having faulty information) about the total Program. The *Handbook* should help alleviate this.

We are presently developing a computer program which will enable students to obtain information about how they may manage their loan debts for a ten year period after graduation. This program will be tailored to the individual and it will be based on a student's anticipated situation during this ten year period (i.e. type of work, anticipated salary, family situation, etc.). Again, we believe that this knowledge will help to lessen students' concern about their financial situation. The program will be available in the academic year 1985-86.

As was the case last year, the Veterinary School will subsidize the Financial Aid Program for students whose demonstrated need is not met with the usual sources of money. Many students will need to obtain HEAL Loans in 1985-86 and the School will pay interest on these so that it does not accrue while the students are in school.

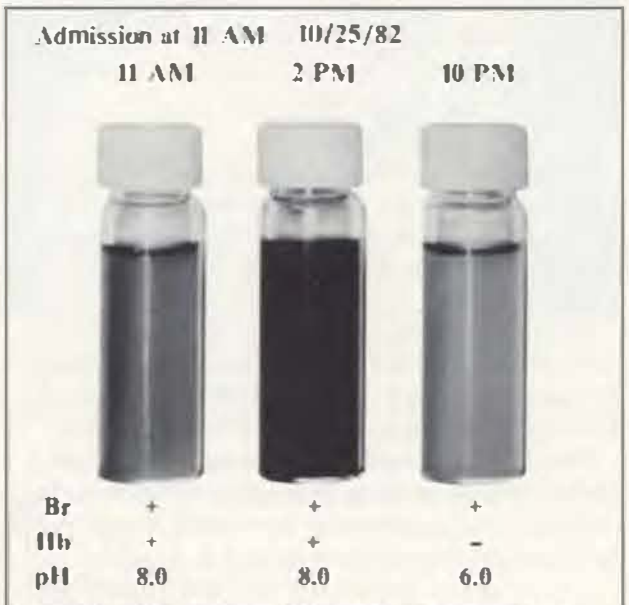
John E. Martin, V.M.D.

A New Inherited Disorder in English Springer Spaniels

Hereditary defects are common in the canine population, due partially to the narrow genetic pool in certain breeds and the frequent inbreeding. Many hereditary diseases are caused by an enzyme defect resulting in metabolic disturbances that can be life-threatening.

Dr. Urs Giger, a young faculty member at Penn's School of Veterinary Medicine, is investigating a newly recognized enzyme defect, namely, a phosphofructokinase deficiency in red blood cells of some English Springer spaniels. These studies were initiated at the University of Florida in collaboration with Dr. J.W. Harvey where Dr. Giger was a postdoctoral fellow and resident in small animal medicine. Retinal dysplasia and rage syndrome are two other inherited disorders in English Springer spaniels that have been previously studied at the University of Pennsylvania.

Phosphofructokinase, a major regulatory enzyme in all cells, catalyzes the metabolism of sugar and thereby is central in the production of energy to maintain normal cell function. The clinical features of this enzyme deficiency are intermittent anemia with weakness and pale gums, and dark urine which ranges from orange to coffee-brown colored. Interestingly, a crisis of anemia and dark urine can be precipitated by hyperventilation. Hyperventilation occurs readily in all dogs owing to their tendency to pant and regulate their body temperature by this means. Thus, excessive panting, prolonged barking, exercise, heat and humidity can induce an episode of accelerated destruction of red blood cells due to the enzyme deficiency and result in a lower red blood cell count (anemia) and dark urine (pigmenturia) for a few days. The dark urine is caused by the presence of massive amounts of bilirubin, a pigment that is formed from hemoglobin released from destructed red blood cells (hemolysis). Some affected dogs have very mild signs, and other affected dogs appear to have less likely problems if stressful episodes that induce hypoventilation are avoided.



Urine samples (specimens) from a dog with enzyme deficiency. Urine was collected before (left), during (middle) and after (right) a crisis induced by exercise. The sample in the middle indicates the severe pigmenturia caused by breakdown products from red blood cell destruction.

Dr. Giger presently knows seven affected show and field trial English Springer spaniels of one to eight years of age. As most enzyme defects, phosphofructokinase deficiency is autosomal recessive inherited. Mating of two carrier animals will result in affected, carrier and unaffected dogs. A diagnosis of this disorder can be made by the above mentioned clinical features and in Dr. Giger's laboratory by measuring the enzyme activity in small fresh blood samples. Carriers can be detected by the same laboratory tests. This is a rare inherited disorder and English Springer spaniel breeders should not be alarmed.

Dr. Giger hopes to investigate further the prevalence in this breed, the mechanism of red blood cell destruction, and therapeutic management of this disorder. Further information is available from Dr. U. Giger, Department of Clinical Studies (Philadelphia), VHUP/H1, 39th and Spruce Streets, Philadelphia, PA 19104.

Pioneer Black Veterinarians at Penn

Dr. William H. Waddell (V'35) was the sixth black graduated from the School of Veterinary Medicine at the University of Pennsylvania. In the 50 years since leaving Penn he has carved out an outstanding career in many fields—practice, education, military service, mental health activities, government work and a continuing interest in the recruitment and retention of minority students. Dr. Waddell has written on the history of black veterinarians and his material serves as the source of much of the information presented here.

Before coming to the Veterinary School, Dr. Waddell attended the Manassas Industrial School in Virginia and then graduated from Lincoln University, Oxford, PA. Soon after graduation from Penn he became affiliated with Tuskegee Institute, Alabama, where he eventually became director of the Veterinary Division. In 1937, along with Dr. Jesse R. Otis, he was instrumental in founding the first black veterinary school at this institution, and he served as acting dean. During World War II Dr. Waddell was regimental veterinarian of the famous 9th Cavalry and participated in four major campaigns. After the War he practiced in West Virginia and North Dakota and for ten years he worked for the U.S. Department of Agriculture. In both West Virginia and North Dakota Dr. Waddell was active in mental health affairs and he received commendations from the governors of both of these states for these activities.

Dr. Waddell was the first black member of the American Veterinary Medical Association and he has received alumni awards from the Manassas Industrial School, Lincoln University, and in 1970 he was the recipient of a General Alumni Society Award from the University of Pennsylvania. In 1984 Dr. Waddell was presented with the Centennial Award of Merit by the School of Veterinary Medicine.

Dr. Waddell continues to have an active interest in the education of black veterinary students. As a part of this interest he has established loan funds at both Tuskegee and Penn. Dr. Waddell and friends have contributed to the fund at Penn which grants emergency loans to all qualified students.

Dr. Waddell receiving the Centennial Award of Merit on Alumni Day 1984.

Dr. Waddell is the author of several books. In 1965 he first published *The Black Man in Veterinary Medicine* (Taylor Publishing Co., Texas & California). This was recently republished (Friesen). He has also written *People are the Funniest Animals* (Dorrance, Philadelphia), and *Universal Veterinarianism* (Manitoba Publishers, Canada).

Dr. Waddell's research on the history of black veterinarians reveals that the first black graduate in the University of Pennsylvania's Veterinary School was Augustus N. Lushington who came to the School from Trinidad, British West Indies. Dr. Lushington graduated in 1897 and practiced for two years in Philadelphia. In 1900 he relocated to Lynchburg, Virginia.

The second black to graduate from Penn's Veterinary School was John Baxter Taylor in 1908. In the same year Dr. Taylor was the first black to participate in the Olympic Games in which he won a gold medal as a member of the United States 1600 meter relay team. Not long after his history-making performance in the Games, John Taylor died of pneumonia.

Dr. Taylor was followed by Dr. Cornelius Vanderbilt Lowe who graduated in 1909, Louis E. Baxter, 1910, and Augustus M. Fisher, 1912. According to Dr. Waddell, Dr. Lowe was the first black veterinarian to be employed by the new U.S. Bureau of Animal Industry (BAI) and throughout his lifetime was influential in stimulating many black students to choose veterinary medicine as a career. Louis E. Baxter served as a lieutenant in World War I with the 22nd Hospital Unit, U.S. Army and then practiced for many years in Bernardsville, N.J. At one time he served as president of the NAACP. Dr. Fisher, in addition to his studies at Penn, also studied for brief periods at the Royal Veterinary College, London, and at the Hahnemann Medical College, Philadelphia. He practiced for a period in Titusville, PA, and then joined the U.S. Department of Agriculture.

Dr. Jane Hinton (V'48) was the first black woman to graduate from the Veterinary School. Dr. Hinton's father, Dr. William A. Hinton, was a professor at Harvard Medical School. Prior to coming to Penn, Jane Hinton, after graduation from Simmons College in 1939, worked in bacteriological research and was a member of the Harvard Medical School Expedition to Canada where she studied some communicable diseases that had become epidemic in army troops stationed there. Dr. Hinton also spent three years, during World War II, in a laboratory at Fort Huachuca Army Hospital. She entered the federal service in the early 1960s and is presently a veterinary medical officer in Veterinary Services and is stationed in Massachusetts.

John E. Martin V.M.D.

Rosettes & Ribbons

The Suburban Veterinary Medical Association in Montgomery County, Pa. elected the following officers: **Dr. Steven G. Prier (V'81)**, president; **Dr. Joseph Stefanacci (V'83)**, vice president; **Dr. Michael J. Herman (V'81)**, treasurer; **Dr. Eugene A. Barnsteiner (V'80)**, secretary.

Dr. Richard Klesmer (V'61), was installed as the president of the New Jersey Veterinary Medical Association in April 1985.

Dr. Gustavo Aguirre (V'68), associate professor of ophthalmology, announced that the Inherited Eye Diseases Studies Unit received a grant of $10,000 from the American Irish Setter Foundation for the study of PRA carrier detection in Irish setters. Additional funds for PRA research by the EDSU were received from the American Shetland Sheepdog Association, which contributed $2,500, and the Collie Club of America, which gave $3,000.

Leslie G. Herr, a third year student, received the EVSCO Prize in Parasitology for her essay "Trichinosis in the U.S.: Why hasn't it been eradicated?" The EVSCO essay competition is open to all veterinary students, and there is only one recipient per year. Ms. Herr is active in the student-run Wildlife Service and in the International Veterinary Medicine Club. The prize carries a $500 scholarship.

Leslie G. Herr, the recipient of the 1984 EVSCO Prize in Parasitology and Dr. Carl E. Kirkpatrick (left) and Mr. Richard B. Shavelson, EVSCO Pharmaceuticals representative.

Daryl Biery D.V.M., associate professor of radiology and Chief, Section of Radiology, has been appointed Chairman of the Department of Clinical Studies in Philadelphia.

Roger Caras, noted author and commentator and a member of the School's Board of Overseers, has been appointed Adjunct Professor of Animal Ecology in the Department of Clinical Studies.

The AVMA awarded **Mr. Caras** the first AVMA Humane Award. It was presented during the Inaugural and Awards Luncheon at the association's annual meeting in Las Vegas.

Drs. Corinne Raphel Sweeney, Raymond W. Sweeney III (V'82) and **Lawrence R. Soma (V'57)** received a grant from the Board of the University of Pennsylvania Research Foundation for their proposal "Metronidazole: Pharmakinetics in the Horse After Oral and Intravenous Administration."

New Bolton Center was the location for the joint regional meeting of the Helminthological Society of Washington, the New Society for Parasitology and the Royal Society for Tropical Medicine and Hygiene. The meeting, chaired by **Dr. Gerhard A. Schad**, professor of parasitology, took place on May 11. **Dr. Leon Weiss**, Grace Lambert Lansing Professor of Cell Biology, participated as one of the speakers.

The Audio-Visual Committee at the School is now chaired by **Dr. Colin Harvey**, professor of surgery.

Dr. Donald Abt (V'61), professor of epidemiology and biostatistics and associate dean, was the principal speaker at the Alumni Club of Lehigh Valley meeting in May. Dr. Abt discussed veterinary medicine and some of the more unique ways in which today's veterinarians practice their profession.

Dr. Lawrence Glickman (V'72), associate professor of epidemiology and Chief, Section of Epidemiology, attended a workshop sponsored by the National Academy of Sciences entitled "Natural Exposure Studies of Animals and Human Risk Assessment." The workshop was held in April in Washington.

Dr. Samuel H. Smith, dean of the College of Agriculture, Pennsylvania State University, and a member of the School's Board of Overseers, has accepted the position as President of Washington State University, effective July 1, 1985.

Dr. Samuel Chacko, professor of pathology, was the recipient of the Lindback Award for Distinguished Teaching. Dr. Chacko teaches in the department of pathobiology and he is director of the doctoral program in pathology at the School.

Dr. Joan B. O'Brien (V'63), professor of medicine, spoke at the annual Voorsjaardagen meeting of the Royal Netherlands Veterinary Association in Amsterdam in April on upper airway disease.

Dr. Robert L. Leighton (V'31) received the Gaines "Fido" Award at the AAHA's annual meeting. The award is given annually to an individual who has made extensive contributions to the practice of veterinary medicine and surgery, particularly in the small animal area. Dr. Leighton is professor emeritus, Department of Surgery, School of Veterinary Medicine at the University of California. He specializes in orthopedic surgery and, since 1947, has published extensive works on that subject and related topics.

Dr. Robert L. Leighton (V'31) receives the "Fido" Award from Steve Willett, Gaines Professional Services

Salsbury Scholarships

The Dr. J.E. Salsbury Foundation of Charles City, IA, made a $100,000 grant to the School of Veterinary Medicine to endow scholarships for senior veterinary students.

Dr. Joseph Edward Salsbury, after whom the foundation is named, was a pioneering and enterprising veterinarian. He arrived in this country in 1908 and worked in Illinois and California where he became interested in veterinary medicine. In 1911 he enrolled at Kansas City Veterinary College. Early in his career Dr. Salsbury became interested in the treatment of poultry, a neglected field of veterinary medicine at that time. He realized the importance of poultry flocks to the farm economy and set out to prevent the losses incurred by poultry diseases.

Dr. Salsbury developed several poultry biologics which helped to combat disease in flocks. His products quickly gained acceptance, and in 1919 the Dr. Salsbury Laboratories were built in Charles City, IA, to manufacture the biologics. Distribution soon became nationwide and the company grew. Today the Salsbury Laboratories occupy a large, modern research complex in Charles City. Fromm Laboratories is a subsidiary of the company, and both are part of the Solvay Group, an international pharmaceutical firm.

The Salsbury Scholarships at Penn and other veterinary schools are a tremendous help to veterinary students and will perpetuate Dr. J.E. Salsbury's commitment to helping farmers and pet owners in their quest of raising healthy animals.

Second Century Fund

Vincent B. Murphy, Jr., chairman of the Second Century Fund, reported at the May 22, 1985 meeting of the Board of Overseers gifts, subscriptions and bequests totaling $17,945,488.

Dr. Jack Knowles (V'38) and his wife Caroline, were featured on the front cover of *Southern Boating*, a monthly magazine. Dr. Knowles is shown steering a Riva 2000 off to Bimini.

ALPO Pet Foods Inc. contributed $1,000 to purchase a pointer, podium, microphone and a projector for the teaching seminar room at VHUP.

The second year class presented an award for teaching excellence to the Parasitology Laboratory. Honored were **Dr. Jay Farrell, Dr. Colin Johnstone, Dr. Carl Kirkpatrick (V'81), Dr. James Lok, and Mr. Derek Muncey.**

Dr. Wayne H. Riser, emeritus research professor of pathology, recently authored *The Dog: His Varied Biological Makeup and Its Relationship to Orthopaedic Diseases*. The volume was published jointly by ALPO Pet Foods, Inc. and the American Animal Hospital Association. It was distributed to all veterinarians who are small animal practitioners through the ALPO Pet Food Center. The booklet is available to the public; please write ALPO Pet Food Center, P.O. Box 2187, Allentown, PA 18001.

Dr. Anthony M. Stefanski (V'36) received the Louisiana Veterinary Medical Association Certificate of Appreciation "for his service as executive secretary furthering growth and development of the association; for extensive efforts to eradicate and control livestock diseases through his many years in the practice of veterinary medicine." Dr. Stefanski worked for the U.S. Department of Agriculture from 1936 until 1973, when he retired. He now lives in Crowley, LA.

The Dog Writer's Educational Trust named a scholarship after **Dr. Richard Gaetz (V'35)**, one of the Trust's most consistent supporters. Dr. Gaetz is an AKC licensed judge of all sporting dogs and of some terrier breeds.

Dr. Robert E. Davies, Benjamin Franklin Professor of Molecular Biology and University Professor, attended a workshop at the NASA-Ames Research Center, Palo Alto, CA to write a book on exobiology in earth orbit together with other contributors. Dr. Davies has been invited to present a paper on Panspermia at the 14th International Review Meeting on Communication with Extraterrestrial Intelligence. The meeting takes place during the 36th Annual Congress of the International Aeronautical Federation to be held in Stockholm, October 7 to 12, 1985.

Dr. Joan Hendricks (V'79), assistant professor of medicine, presented an abstract at the meeting of The Federation for American Societies of Experimental Biology in April at Anaheim, CA.

Mark D. Esser receives the Pfizer scholarship from Dean Marshak.

Mark D. Esser, a senior student, received a $500 scholarship and a plaque from the Agricultural Division of Pfizer, Inc.

The Poultry Unit at New Bolton Center has received funds for the construction of an infectious disease containment building for the study of diseases of avian and other species.

Dr. Adrian Morrison, professor of anatomy, delivered the Tarbox Distinguished Neuroscientist Lecture at Texas Tech University. He also co-edited a book on *Brain Mechanisms of Sleep*, and participated in symposia on a number of topics: Sudden Infant Death Syndrome, Santa Monica, CA; Neuronal and Endogenous Chemical Control Mechanisms of Emotional Behavior, Fukuoka, Japan; 25th Anniversary Symposium on the Neurophysiology of Sleep, Sleep Research Society meeting, Seattle. He lectured at Oxford University, England; Netherlands Institute for Brain Research, Nijmegen University; University of Bologna; University of Parma, and University of Siena.

The Animal Rescue League of Philadelphia contributed $500 to the **Wildlife Service** at the School for new equipment.

Dr. Victoria L. Voith, assistant professor of medicine, presented a paper entitled *Analysis of 2,500 Telephone Calls about Behavior Problems of Dogs and Cats* at the Animal Behavior Society Meeting in Raleigh, NC, in June. **Elizabeth A. McCrave**, research assistant, also participated in the conference. She presented a paper, *Correlates of Separation Anxiety in the Dog*.

Dr. John B. Madison, (V'81) and **Dr. Robert H. Whitlock**, professor of medicine and Chief of Medical Services at New Bolton Center, received a grant from the Board of the University of Pennsylvania Research Foundation for their proposal "Evaluation of Extrinsic Neural and Humoral Controls of Abomasal Motility."

Mrs. Joan Ferguson Pew, a member of the School's Board of Overseers, has been elected as the first woman president of the National Association of State Racing Commissioners. Mrs. Pew, for several years, has been a member of the Horse Racing Commission of Pennsylvania.

Four researchers at the School received funds from Penn's new internal research fund: **Drs. Joan C. Hendricks (V'79)** and **Joan B. O'Brien (V'63)** for "Sleep and Breathing Patterns During Development in Pups with a Spontaneous Upper Airway Obstruction"; **Dr. Gail K. Smith (V'74)** for "Hip Dysplasia, Biomechanical Correlations and Radiographic; **Dr. M. Raja Iyengar** for "Reactivity, Energetics, and Physiological Role of N-Phospocreatinine: A Newly Identified Phosphagen in Muscle."

The Agriculture Research Committee of the State of Pennsylvania has approved a number of research projects for funding at the **School**. They are: Pseudorabies Virus Infection of Swine: Molecular Epidemiology and New Approaches to Analysis of Latent Infection; Transmission and Significance of Bovine Leukemia Virus Infection; The Relationship of Hemoglobin Types and Susceptibility of Sheep to Parasite Infection; Effect of Protein Degradibility and Estrous Detection on Dairy Reproduction.

The public service spots featuring **MAN AND ANIMALS: Living, Working and Changing Together**, the exhibit at the University Museum, won a silver medal and a gold medal at the recent CASE competition. One spot featured an Abyssinian kitten visiting the exhibit at night. The other spot featured actors from the musical CATS visiting their ancestors. Both spots are popular with television viewers and have brought many visitors to the exhibit.

Memorial Program

For several years, there has been a memorial program at the School of Veterinary Medicine. It is an IN MEMORIAM for euthanized animals and is for the benefit of the Veterinary Hospital of the University of Pennsylvania. This year we have revised it slightly to allow for more widespread participation.

Euthanasia of a companion animal, even when it is clearly the most humane course, is often a painful experience for both owner and veterinarian. As a consequence, we would like to counterbalance this with a positive effort.

Therefore, the School has sent its graduates postage-paid envelopes which provide the veterinarian with the option of making a memorial gift for an euthanized pet or suggesting that the owner send one. In either case, upon receipt of the contribution, both the veterinarian and the client receive an acknowledgement from the Veterinary Hospital.

Those who have participated in this program have indicated the following benefits:

1. The client recognizes this as a personal gesture of concern.

2. Both the client and the veterinarian have the opportunity to support animal health research.

3. The relationship between the client and the veterinarian is strengthened, and one is formed between the owner and the School of Veterinary Medicine. Further support for our work may take place over a period of time, thus promoting veterinary education.

We believe the pet owner will appreciate this thoughtfulness and be comforted knowing that the memory of that animal will perpetuate animal health care and medical studies. And a gift will have been made to help sustain the University of Pennsylvania's position in veterinary medicine.

Alumni Day 1985

More than 250 alumni and guests returned to New Bolton Center on May 18 to participate in class reunions and to renew old friendships. Carriage rides were offered, tours of New Bolton Center were available and everyone gathered for a buffet luncheon. In the evening the action moved to the Wilmington Hilton Hotel for a night of dining and dancing.

Dr. and Mrs. Israel Live (V34) (left) and Dr. and Mrs. Robert Shomer (V34) (right).

Dr. Mark Allam (V32) instructs Dr. Daryl Biery on the proper methods of carriage driving as alumni and their families toured New Bolton Center.

Alumni dined and danced well into the night.

Class of 1935—50th Reunion
Dr. A.J. Rosenberg, Dr. Harold Burstein, Dr. Amos Stults, Dr. Bernard Klausman, Dr. R.L. Booth.

Class of 1940

Class of 1950

Class of 1970

Veterinary Medical Alumni Society

Veterinary Alumni Award of Merit Recipients were honored during Alumni Day 1985. The awards were presented by Dr. Susan McDonough (V'68), co-chairman of the Veterinary Medical Alumni Society Awards Committee.

Dr. George Lewis Hartenstein III (V40) receives the award.

Dr. Victor A. Menghetti (V45) is presented the award.

Dr. W. Horker Rhodes (V55) receives the award.

Dr. Arthur Richards, Jr. (V'49) is presented the award.

Dr. John E. Whitehead (V'52) receives the award, Veterinary Medical Alumni Society

Dr. William Hardy, Jr. (V'66) (left), outgoing president of the VMAS hands the gavel to Dr. David A. Meirs II (V'54), the new president of the society.

Dr. A. Cleveland Brown (V'59) presents the reunion year gift from the Class of 1980.

Dr. Charles W. Raker (V'42), the chairman for Veterinary Alumni Annual Giving for 1985/86.

Dr. Peter J. Craig (V'55) (left), first vice president of the Veterinary Medical Alumni Society and Dr. Lawrence Soma (V'57) enjoy a quiet chat.

Commencement

Commencement exercises for the 100th graduating class were held on May 20, 1985 at the Zellerbach Theatre. The Commencement Address was given by David E. Rogers, M.D., president of the Robert Wood Johnson Foundation and a member of the School's Board of Overseers. Dean Robert Marshak then presented the diplomas to 105 members of the Class of 1985:

Graduating with Honors were

Summa Cum Laude
Betsy Margaret Allen
Eric Mitchell Arion
Edward Joseph Kochin
Michael Robert Petranto
Ferdinand Guy Visintainer

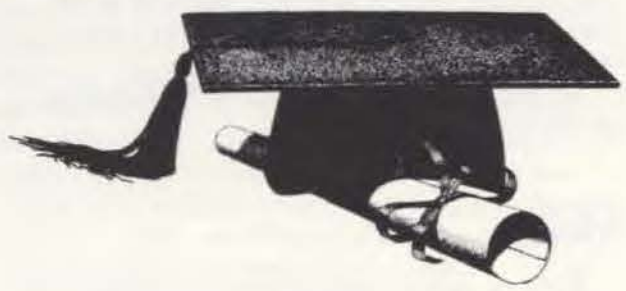
Magna Cum Laude
Helen Elizabeth Campbell
Cathy Ann Catanzaro
Christopher Lawrence McCawley
James Alexander Thomson
Todd Richard Waybright

Cum Laude
Joseph Francis Dalo, Jr.
Lauren Kay Mazzarelli
Neal Curtis Ralston
Johanna Marie Reimer
Susan Marie Stehman
Harlan Cooper Williams, Jr.

Class of 1985
Betsy Margaret Allen
Sven Lewis Anstadt
Eric Mitchell Arion
Kenneth Harold Barnsley
Barbara Fern Barow
James Frederick Barton, Jr.
Robert Alan Bialt
Julia Marcy Block
Karen Caccese Brake
Helen Elizabeth Campbell
Cathy Ann Catanzaro
Elizabeth Roberts Clark
Mark Anthony Cofone
Meryl Hope Cohen
Jeffrey John Conrad
Melinda Cosgrove
David Bradford Crutchfield
Joseph Francis Dalo, Jr.
Diane Elizabeth Delmonico
Christina Anastasia Dougherty
Carla Kim Drozdowicz
Shelley Robbins Epstein
Mary Patrice Ezzo-Meiers
Jeffrey Mark Feinman
Thomas Joseph Ferguson
David John Ferrari
Barbara Jo Flickinger
Caroline Marie Flower
Wendy Ann Freeman
Patricia Forsythe Garton
Samuel Joseph Geller
Sheldon Larry Goldstein
Charles Phillip Hable, II
Anne Deffner Hallowell
Jeanne Merle Herring
Erich Coder Hoffman
Kathy Jean Hoffman
Donna Lynne Hughes
Julia Tracy Hunt
Kathy Lu Jones Jamison
Shirley Ann Jeffers
Mark Arthur Johnson
Geoffrey Brad Kardon
Bruce Douglas Klink
Edward Joseph Kochin
Kathleen Marie Kral
Steven Michael Kuhlman
Bruce Edward Laidig
Jean Margery Lasser
Lisa Ellen Latshaw
Sue Ann Latterman
Ava Constance Logan
Robert David Macmillan
John Stanley Majcher
Lauren Kay Mazzarelli
Dorothy Rae McAdams
Christopher Lawrence McCawley
Richard John Meinersmann
George Richard Melillo, Jr.
Jacqueline Ann Metzler
F. Thomas Miller
Steven Leslie Milliken
Georgia Ellen Molek
Patricia Ann Morgan
Robert Allan Mowday, Jr.
Geneva Diane Murray
Scott Raymond Palmer
Gregory Henry Peterson
Michael Robert Petranto
Susan Marie Prattis
Patricia Jane Provost
Neal Curtis Ralston
Johanna Marie Reimer
Randal James Rieder
Crosby Newbold Roper
David Neil Rosenberg
Arline Claire Rosenfeld
Carole Linda D. Ross
Charles Edward Rupprecht
Kenneth Kenji Sadanaga
Curtis George Schelling
Elizabeth Wood Smith Sinnigen
Ronald John Stas
Lynn Emmet Steadman
Susan Marie Stehman
Scott Andrew Stekler
Rachael Swann
Teresa Josephine Sylvina
Gregory Mart Thibodeau
Robert Melvin Thompson, Jr.
James Alexander Thomson
Michael Edward Tomasic
Rebecca Tomasic
Gary Paul Van Dyke
Kymberly Violet Van Orsdell
Felix Vega
Ferdinand Guy Visintainer
Cory Williams Voras
Todd Richard Waybright
Marie Inez Weber
Monique Yvette Wells
Suzanne Calder Whitehead
Cynthia Lyn Willard-Mack
Harlan Cooper Williams, Jr.
William Heaton Yerkes, IV

Dr. David E. Rogers and Charles S. Wolf (right).

Dean Robert Marshak and Associate Dean Joseph Skeller present the diplomas.



Members of the graduating class.

Carla Drozdowicz, president of the Class of 1985, and George Melillo, Jr., class vice president.

Dr. Lawrence Hutchinson administers The Veterinarian's Oath.

A number of graduates received awards:

The Leonard Pearson Prize . . . . . Julia Tracy Hunt
The J.B. Lippincott Prize . . . . . Edward Joseph Kochin
The 1930 Class Prize . . . . . Betsy Margaret Allen
The Women's Auxiliary to the American Veterinary Medical Association Prize . . . . . Carla Kim Drozdowicz
The Women's Auxiliary to the Pennsylvania Veterinary Medical Association Prize . . . . . Neal Curtis Ralston
The 1956 Class Medal for Achievement in Pathology . . . . . Monique Yvette Wells
The James Hazlitt Jones Prize in Biochemistry . . . . . Todd Richard Waybright
Xienta Award . . . . . Sheldon Larry Goldstein, Ferdinand Guy Visintainer
American Animal Hospital Association Award . . . . . Shelley Robbins Epstein
Merck Award . . . . . Harlan Cooper Williams, Jr., Helen Elizabeth Campbell
The Auxiliary to the Student Chapter of The American Veterinary Medical Association Prize . . . Edward Joseph Kochin
George M. Palmer Award . . . . . Christopher Lawrence McCawley
Scheidy Prize for Pharmacology . . . . . Todd Richard Waybright
Hill Award . . . . . Thomas Joseph Ferguson
Phi Zeta Award . . . . . Charles Edward Rupprecht
Everingham Prize for Cardiology . . . . . Joseph Francis Dalo, Jr.
Kleen Leen Prize . . . . . Neal Curtis Ralston
E.L. Stubbs Avian Medicine Award . . . . . Cynthia Lyn Willard-Mack

Two faculty members were also honored during the commencement.
Dr. David R. Kowalcyk (V75) was the recipient of the 1985 Norden Distinguished Teacher Award.
Dr. Eugene Eigenmann received the Beecham Award for Research Excellence.

A Trip to China

Milk, a staple food here, is available to Chinese children only if they are eight years or younger. The reason: dairy farms are few and far between.

"China is now trying to attract foreign investors for a multitude of projects," said Dr. David T. Galligan (V'81). "Among them are the establishment of dairy herds to meet the demand for milk and dairy products." Dr. Galligan, the field representative for the Nutritional Service at New Bolton Center, accompanied potential investors on a trip to China in January to look at dairy farming there and to determine the feasibility of investing in dairy herds. "We visited Tsing Dau, which is on the coast, and Ixian, in central China," said Dr. Galligan. "I was brought along to evaluate the economic feasibility of establishing a dairy herd, to check the feed available, and to investigate herd management practices." Dr. Galligan and his companions visited several dairy farms. The herds consisted of Holsteins. Milking at the farms, which were cooperatives, was done mostly by hand. Only one of the farms visited did have a milking parlor. Preventive medicine was minimal and most of the farms were not under a herd health program. "The Chinese are trying to make rapid improvements in animal husbandry," he said. "They are eager to learn and to use methods practiced in other countries."

Dr. Galligan took a computer along to evaluate feeding practices and feed costs. "The feeds were a bit different," he said. "Cows were fed bean stalks and sweet potato vines." The nutritional value of this is about the same as the value of hay, about 10% crude protein. The primary forage was corn silage, grass hay and bean stalks. When Dr. Galligan compared the feed costs to the value of the milk produced, he found that the feed cost / value of milk ratio was similar to that here.

He explained that China may be a market for American dairy stock. "The Chinese are advertising for cows," he said. "Already they own a number of bull semen stations and they do want to increase their dairy herds." According to Dr. Galligan, dairy collectives are being encouraged to develop a free enterprise spirit and are urged to increase production to make greater profits.

"It was an interesting trip," he said. "Agriculture in China involves about 80% of the population compared to 3% here. Veterinary medicine and modern methods in animal husbandry can do much to increase production and we can help the Chinese to establish a viable dairy industry."

Dr. Galligan works in the Section of Nutrition at New Bolton Center and is currently finishing a Masters Program at the Wharton School of Business.

Ground Breaking

Ground breaking ceremonies for the new intensive care-neonatal unit at New Bolton were held May 22 south of the C. Mahlon Kline Orthopedic and Rehabilitation Center at New Bolton.

The building, to be erected on this site, was made possible by a generous gift from the Connelly Foundation. This neonatal unit, to be part of the building was made possible by the generous support of Mrs. Anne French Thorington.

Other major donors are Mrs. A.C. Randolph, Upperville, VA, Mrs. Miles Valentine, Unionville, PA, and Mr. and Mrs. Peter G. Gerry, Princeton, NJ.

The building is the first structure funded by the Second Century Fund. It was designed by the architectural firm of Bohlin Powell Larkin Cywinski.

Ground is broken for the new intensive care-neonatal unit at New Bolton Center by Miss Christine Connelly and Mrs. Anne French Thorington while Charles S. Wolf and Dean Robert R. Marshak look on.

Good Bye

Students and faculty at VHUP said "Good Bye" to interns and residents during a "send-off" ceremony, complete with skits featuring Jamie Quackenbush and Robert Orsher V.M.D. (V'79) as media personalities.

Missed will be the interns Donna Blasko D.V.M., Elizabeth Hamilton V.M.D. (V'84), Molly Herring V.M.D. (V'83), Elizabeth Leech D.V.M., Robert Miliken D.V.M. and Dave Wilke D.V.M.

Clayton Kilrain D.V.M., L. Kay Mason D.V.M. and Anne Norton D.V.M. will remain at the school as residents.

The following completed residencies at the School: Mary Walter D.V.M., Lynn Malitz D.V.M., Jonathan McAnulty D.V.M., and Steve Emms D.V.M., in surgery; Larry Siegler D.V.M. and Alan Kirmayer D.V.M. in medicine; Larry Gainsburg D.V.M. and Tony DeCarlo V.M.D. (V'82) in neurology; Kevin Shanley D.V.M. and Richard Long D.V.M. in dermatology; Amy Marder V.M.D. (V'79) in behavior. Dr. Marder was the first resident in animal behavior in the United States; Mary Louise Martin D.V.M. in medical genetics.

Dr. Mary Walter will remain at the School as an instructor in surgery.

Hello

The new interns and residents began their work at VHUP July 1. We welcome the following interns: Kevin W. Bissonette, University of California, David D. Canton, University of California, Teresita Carro, Purdue University, Mark A. Cofone (V'85), Jonathan Elliott, Cambridge University, Karen L. Gibson, Texas A and M, Carlos C. Hodges, Tuskegee Institute, David E. Holt, University of Sidney, Jill E. Sackman, Michigan State University, and Jane C. Schroeder, University of California.

The residents are Dr. Richard Squires, Dr. Clayton Kilrain and Dr. Richard Hill in medicine; Dr. L. Kay Mason in surgery, soft tissue; Dr. Russell H. Patterson (V'84), surgery, orthopedic; Dr. Lorraine DeJager, cardiology; Dr. Anne Norton, dermatology; Dr. Betsy Dayrell-Hart (V'83), neurology; Dr. Timothy Groves, radiology; Dr. Barbara Chapman, behavior; Dr. Dennis Burkett (V'84), emergency service.

A unicorn came to New Bolton Center one night in May, not for treatment, but for proof that it indeed was the fabled creature.

It let itself be radiographed and examined to silence once and for all those who had claimed its horn was not real and caused great pain to the white animal.

The unicorn and veterinarians met the press in the center ring of Ringling Brothers Barnum and Bailey Circus the next morning to report the findings of the night's work.

"The horn is an integral, natural part of the animal," reported Dr. Charles Reid, professor of radiology. "It is still growing. He was backed up by Dr. William Donawick, professor of surgery. "I am pleased to tell you this animal is a content, living unicorn," he said. "It's a unicorn. That's what you call an animal with one horn."

The controversy was settled, the unicorn continues to spread enchantment under the Big Top wherever it goes.

Botulism, *the silent killer*

Continued from page 3

maintains strict control on who uses the vaccine. Farm managers and horse owners in that state are required to sign a waiver absolving Kentucky from any responsibilities should complications develop.

Dr. Whitlock feels the vaccine is safe and that its use would prevent the disease in the highest risk group, the foals. "After the initial three shot series, mares need an annual booster to keep up the protection," he said. "Botulism, like tetanus, can produce clinical disease, yet recovery is not associated with any immunity. The amount of toxin necessary to cause disease is so small it will not stimulate an antibody response.

Botulism studies continue at New Bolton Center. Dr. Whitlock's team is in search of better diagnostic methods and a test which can confirm the presence of the toxin quickly as time is of the essence when treating a patient with the disease.

"Botulism is a disease of man and animals we have to be aware of," he said. "It is costly and better means of diagnosis will facilitate earlier treatment, helping to save lives. While the largest number of patients here are horses, we also see it in other animals. Recently we treated a herd of cattle and managed to save some animals by giving the horse antitoxin to the cattle. This will only work once. If those cattle get botulism again they cannot be treated in the same manner because of immune reactions." Dr. Whitlock's group recently helped the owner of a pack of hounds which had botulism.

While botulism is of concern in this country, it is of greater frequency in Third World countries where it affects livestock contributing to the loss of valuable food resources.

The vaccination study at New Bolton Center was funded by the Equine Medicine Research Fund at New Bolton Center.

H.W.

Symposium for the Biomedical and Agricultural Industries

Representatives of 24 biomedical and agricultural companies attended the first symposium held at the School on April 16 on this topic. An overview of the research work at the School was given by 28 faculty members. The object of the program was to foster relations between the research enterprise in the School and industry. Short papers in medical genetics, oncology and virology, development and metabolism, cardiology and hypertension, respiration and sleep, cellular immunology, epidemiology and parasitology were given to acquaint the symposium participants with the scope of work in progress. The program was received well and the chairmen of the event, Dr. Leon Weiss and Dr. Kenneth Bovee, hope to organize another such symposium in 1987.

The Grand Champion Award for Santa Gertrudis at the Houston Livestock Show and Rodeo was presented by Dean Robert Marshak. He and Mrs. Marshak are shown here with the winning entry.

Sheltie Skin Syndrome

Shetland sheepdog clubs from coast to coast have contributed about $5,000 for a study of "Sheltie Skin Disease" here at the School.

"Shetland sheepdogs, as a breed, have skin conditions which have not been diagnosed," said Dr. William Miller, Jr., assistant professor of dermatology. "These conditions really should not be called "Sheltie Skin Disease", rather they should be termed Sheltie Skin Syndrome.

"Shelties, like other breeds, can have skin problems such as mange, ringworm, and conditions caused by allergies. But frequently they have a condition which still has to be identified. The dog has crusty, scaly patches around the face, tail and feet and the severity of the disease varies from animal to animal."

Dr. Miller explained that three major diseases are thought to be the cause of Sheltie Skin Syndrome: lupus, dermatomyositis and epidermolysis bullosa. All three have a gross similarity of symptoms and at first glance appear to be the same disorder. However, they are different. Epidermolysis bullosa and dermatomyositis occur when the dog is between age eight weeks and one year. Manifestation of symptoms varies; some animals just show a few crusty, scaly patches while others have a multitude of sores. Lupus, which has the same symptoms, should appear when the animal is older.

"We want to find the frequency of Sheltie Skin Syndrome and determine which disease we are dealing with," said Dr. Miller. "We also want to develop a test so that animals can be identified quickly and treatment can be instituted." He explained that dermatomyositis and epidermolysis bullosa are thought to be genetic. "There is a similar syndrome in the collie which has been proven to be dermatomyositis. In that breed it is a dominant trait with varied expressivity."

Dr. Miller is looking for severely affected dogs for the study and development of tests. "We have some of the funding for the study but lack the animals to do the study with," he said. "The work is important because if these are genetic diseases the frequency of occurrence can only be controlled through selective breeding."

Mrs. James H. Higgins of Sewickley, PA, has been elected to a three-year term on the Board of Overseers of the School of Veterinary Medicine. Mrs. Higgins, here with Overseers Chairman Charles S. Wolf of York, PA, is the delegate of the Pembroke Welsh Corgi Club of America to the American Kennel Club. She is a graduate of Sarah Lawrence College and is active in civic affairs in Pittsburgh.

Bellwether now has a circulation of 25,000. We are aware that some of our readers receive multiple copies of the publication. In an effort to eliminate multiple mailings and to streamline our mailing lists, we ask that our readers take a minute and complete the section below and return it to us. We thank you for your cooperation.

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Alumni and Continuing Education Corner

Beginning in October 1985, class will be back in session continuing education seminars at the University of Pennsylvania School of Veterinary Medicine.

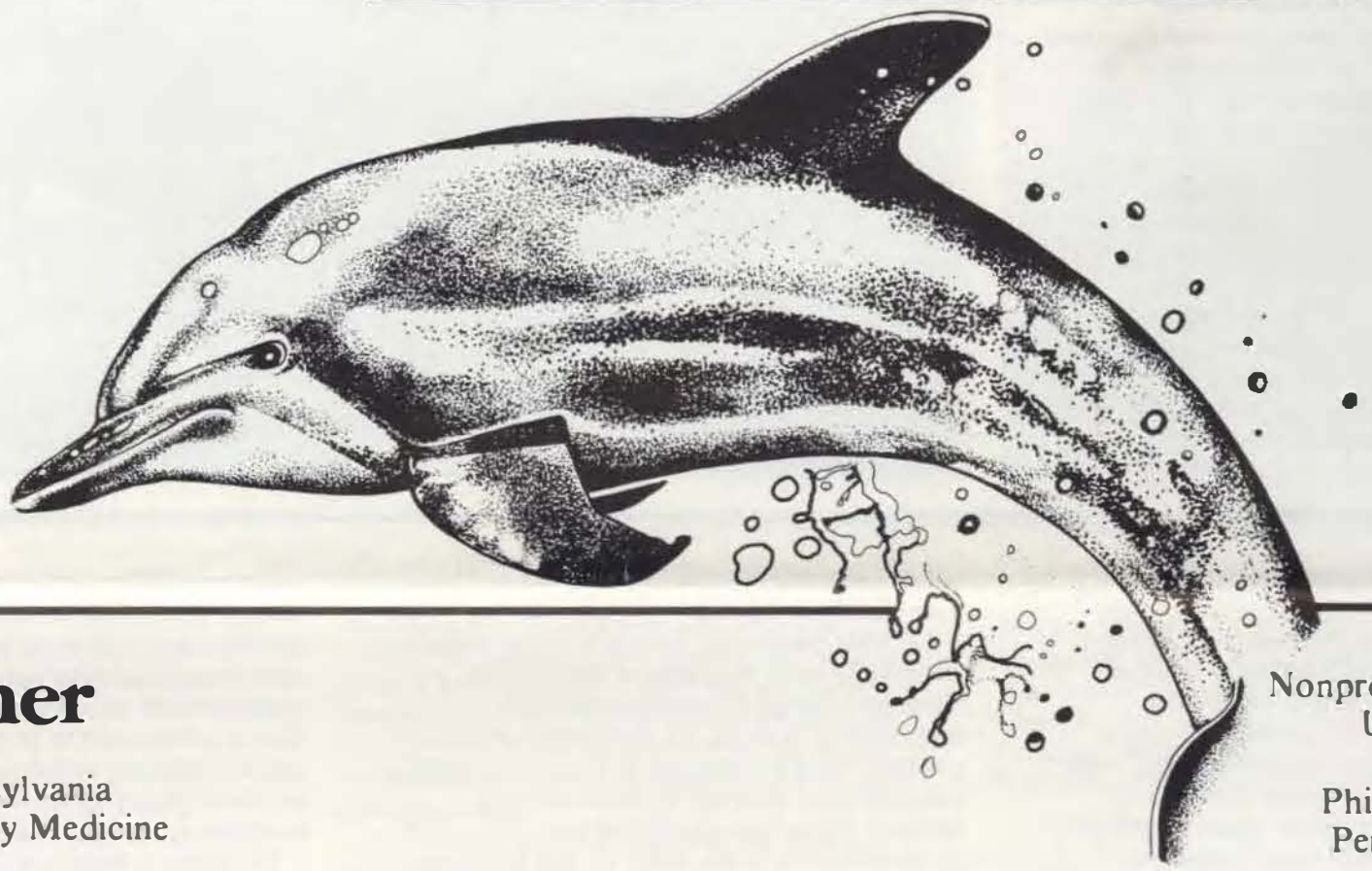
Full day continuing education seminars are scheduled from October 1985 through June 1986. Small animal topics will include: Ophthalmology, Dermatology, Radiology, and Orthopaedics. Large animal presentations on equine medicine and surgery, equine reproduction, and the use of computers in dairy herd management are planned.

Don't forget to mark WEDNESDAY, JANUARY 29 and THURSDAY, JANUARY 30, 1986 on your calender for the 1986 PENN ANNUAL CONFERENCE at the Adam's Mark Hotel in Philadelphia.

WATCH YOUR MAIL FOR THE 1985-1986 BROCHURE!

Dr. M. Josephine Deubler (V'38) celebrated her birthday May 4th after the best in show judging at the Bucks County Kennel Club. Dr. Deubler, the show chairman for this event, has built this show into one of the top twenty in the nation (out of more than 1000).

In addition to giving her time to Bucks County K.C., Dr. Deubler also chairs the Montgomery County K.C. show, held in October. This is the world's largest terrier show.



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